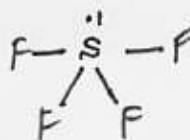


VSEPR- Information

Chem 111-Name:

General Formula	Example of a molecular formula	Lewis electron dot diagram	Number of lone pairs Around middle atom	Number of bonding pairs Around middle atom	Shape diagram (structural diagram)	Name of Shape	Polar/Non-polar
AX	HF	$\begin{array}{c} \text{BP} \\ \downarrow \\ \text{H} \times \text{F} \\ \text{oo} \end{array}$	N/A	1	H-F	Linear	Polar
AX	Cl ₂	$\begin{array}{c} \times \times \\ \times \text{Cl} \times \text{Cl} \times \\ \times \times \end{array}$	N/A	1	Cl-Cl	Linear	Non-polar
AX2	BeI ₂	$\begin{array}{c} \text{oo} \\ \text{Be} \times \text{I} \times \text{Be} \times \text{I} \\ \text{oo} \end{array}$	0	2	Cl-Be-I	Linear	Polar
AX2	BeCl ₂		0	2	Cl=Be=Cl	Linear	Non-polar
AX3	BF ₃	$\begin{array}{c} \times \times \\ \times \text{F} \times \text{B} \times \text{F} \times \\ \times \times \end{array}$	0	3	$\begin{array}{c} \text{F} \text{---} \text{BF} \\ \text{F}' \text{---} \text{F} \end{array}$	Trigonal Planar	Polar Non Polar
AX3	BF ₂ Cl		0	3	$\begin{array}{c} \text{F} \text{---} \text{B} \text{---} \text{Cl} \\ \text{F}' \text{---} \text{F} \end{array}$	Trigonal Planar	Non-polar Polar
AX4	CH ₃ Cl	$\begin{array}{c} \text{H} \\ \times \\ \text{H} \times \text{C} \times \text{H} \\ \text{oo} \end{array} \leftrightarrow \text{CH}_3\text{Cl}$	0	4	$\begin{array}{c} \text{H} \\ \diagup \\ \text{C} \\ \diagdown \\ \text{H} \end{array}$	Tetrahedral	Polar
AX4	CH ₄		0	4	$\begin{array}{c} \text{H} \\ \diagup \\ \text{C} \\ \diagdown \\ \text{H} \end{array}$	Tetrahedral	Non-Polar
AX3 (1 lone pair)	NH ₃	$\begin{array}{c} \text{H} \\ \times \\ \text{H} \times \text{N} \times \text{H} \\ \text{oo} \end{array} \leftrightarrow \text{NH}_3$	1	3	$\begin{array}{c} \text{H} \\ \diagup \\ \text{N} \\ \diagdown \\ \text{H} \end{array}$	Trigonal pyramid	Polar
AX2 (2 lone pairs)	H ₂ O	$\begin{array}{c} \times \times \\ \times \text{O} \times \\ \times \times \end{array}$	2	2	$\begin{array}{c} \text{H} \text{---} \text{O} \text{---} \text{H} \end{array}$	v-shaped or bent	Polar



General Formula	Example of a molecular formula	Lewis electron dot diagram	Number of lone pairs Around middle atom	Number of bonding pairs Around middle atom	Shape diagram (structural diagram)	Name of Shape	Polar/Non-polar
AX5	PF ₅		0	5		Trigonal Bipyramidal	Non-polar
AX5	PF ₄ Cl		0	5		Trigonal Bipyramidal	Polar
AX4 (1 lone pair)	SEl ₄		1	4		Trigonal Pyramidal	Polar
AX3 (2 lone pairs)	SF ₄		2	3		Teeter-totter See-saw	Polar
AX3 (2 lone pairs)	ICl ₃		2	3		T-shaped	Polar

(2 lone pairs)							
AX3 (2 lone pairs)	BrCl_3		3		Trigonal planar Non polar	Polar (change one Cl to another halogen)	
AX6	SCl_6		6		Octahedral	Non-polar	
AX6	SCl_5Br		6		Octahedral	Polar	
AX5 (1 lone pair)	IBr_5		6 5		Square pyramid	Polar	
AX4 (2 lone pairs)	XeF_4		4		Square planar	Non-polar	